

4.1 Introduction

Historically, the Water Authority has relied on imported water supplies purchased from Metropolitan to meet the needs of its member agencies. Metropolitan's supplies come from two primary sources, the State Water Project (SWP) and the Colorado River. After experiencing severe shortages from Metropolitan during the 1987–1992 drought, the Water Authority began aggressively pursuing actions to diversify the region's supply sources. Comprehensive supply and facility planning over the last 18 years provided the direction for implementation of these actions.

This section provides specific documentation on the existing and projected supply sources being implemented by the Water Authority. For purposes of analysis in the 2010 Plan, supplies are separated into one of three categories: verifiable, additional planned, or conceptual. "Verifiable" projects are those with adequate documentation regarding implementation and supply utilization, and are used in the reliability assessment in Section 9, "Water Supply Reliability." "Additional planned" projects are those that either the Water Authority or member agencies are actively pursuing and currently funding, but do not rise to the level of verifiable for implementation. The additional planned projects are utilized in Section 10, "Scenario Planning – Managing an Uncertain Future," as potential strategies to manage future uncertainty planning scenarios. "Conceptual" projects are those considered to be in the pre-planning phase, where the projects have not progressed to a point where the project yield can be factored into reliability assessments or uncertainty planning for this 2010 Plan.

A Water Resources Plan developed in 1993 and updated in 1997 emphasized the development of local supplies and core water transfers. Consistent with the direction provided in the 1997 plan, the Water Authority entered into a Water Conservation and Transfer Agreement with IID, an agricultural district in neighboring Imperial County, in 1998. Through the transfer agreement, the Water Authority received 70,000 AF in 2010, with the volume increasing annually until it reaches 200,000 AF/YR in 2021. The IID Water Conservation and Transfer Agreement supply source is considered a verifiable Water Authority supply.

In 2003, as part of the execution of the QSA on the Colorado River, the Water Authority contracted for 77,700 AF/YR of conserved water from projects to line the All-American and Coachella Canals (AAC and CC, respectively). Deliveries of this conserved water from the CC reached the region in 2007, and deliveries from the AAC reached the region in 2010. Expected supplies from the canal lining projects are considered verifiable Water Authority supplies.

To further diversify regional supplies, the Water Authority's 2005 Plan identified seawater desalination as a potential supply for meeting future demands. In keeping with the objective of the 2005 Plan, the Water Authority is pursuing the purchase of a water supply from the Carlsbad Desalination Project, a fully-permitted private desalination project at the Encina Power Station site located in the City of Carlsbad. In 2010, the Water Authority's Board of Directors approved a Term Sheet between the Water Authority and the private investor-owned company, Poseidon Resources (Poseidon), and directed staff to prepare a draft Water Purchase Agreement based on its provisions. The Carlsbad Desalination Project is considered a verifiable Water Authority supply.

In addition to the Carlsbad Desalination Project, the Water Authority is also pursuing the development of two other regional seawater desalination projects – planning efforts for a new regional desalination project located on Camp Pendleton, and the feasibility evaluation of a binational seawater desalination project in Rosarito, Mexico.

4.2 Water Authority – IID Water Conservation And Transfer Agreement

On April 29, 1998, the Water Authority signed a historic agreement with IID for the long-term transfer of conserved Colorado River water to San Diego County. The Water Authority–IID Water Conservation and Transfer Agreement (Transfer Agreement) is the largest agriculture-to-urban water transfer in United States history. Colorado River water will be conserved by Imperial Valley farmers who voluntarily participate in the program and then transferred to the Water Authority for use in San Diego County.

4.2.1 Implementation Status

On October 10, 2003, the Water Authority and IID executed an amendment to the original 1998 Transfer Agreement. This amendment modified certain aspects of the Transfer Agreement to be consistent with the terms and conditions of the QSA and related agreements. It also modified other aspects of the agreement to lessen the environmental impacts of the transfer of conserved water. The amendment was expressly contingent on the approval and implementation of the QSA, which was also executed on October 10, 2003. Section 6.2.1, “Colorado River,” contains details on the QSA.

On November 5, 2003, IID filed a complaint in Imperial County Superior Court seeking validation of 13 contracts associated with the Transfer Agreement and the QSA. Imperial County and various private parties filed additional suits in Superior Court, alleging violations of the California Environmental Quality Act (CEQA), the California Water Code, and other laws related to the approval of the QSA, the water transfer, and related agreements. The lawsuits were coordinated for trial. The IID, Coachella Valley Water District, Metropolitan, the Water Authority, and state are defending these suits and coordinating to seek validation of the contracts. In January 2010, a California Superior Court judge ruled that the QSA and 11 related agreements were invalid, because one of the agreements created an open-ended financial obligation for the state, in violation of California’s constitution. The QSA parties appealed this decision and are continuing to seek validation of the contracts. The appeal is currently pending in the Third District Court of Appeal. A stay of the trial court judgement has been issued during the appeal. Implementation of the transfer provisions is proceeding during litigation. For further information regarding the litigation, please contact the Water Authority’s General Counsel.

4.2.2 Expected Supply

Deliveries into San Diego County from the transfer began in 2003 with an initial transfer of 10,000 AF. The Water Authority received increasing amounts of transfer water each year, according to a water delivery schedule contained in the transfer agreement. In 2010, the Water Authority received 70,000 AF. The quantities will increase annually to 200,000 AF by 2021 then remain fixed for the duration of the transfer agreement. The initial term of the Transfer Agreement is 45 years, with a provision that either agency may extend the agreement for an additional 30-year term.

During dry years, when water availability is low, the conserved water will be transferred under IID's Colorado River rights, which are among the most senior in the Lower Colorado River Basin. Without the protection of these rights, the Water Authority could suffer delivery cutbacks.

4.2.3 Transportation

The Water Authority entered into a water exchange agreement with Metropolitan on October 10, 2003, to transport the Water Authority–IID transfer water from the Colorado River to San Diego County. Under the exchange agreement, Metropolitan takes delivery of the transfer water through its Colorado River Aqueduct. In exchange, Metropolitan delivers to the Water Authority a like quantity and quality of water. The Water Authority pays Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. Under the terms of the water exchange agreement, Metropolitan will make delivery of the transfer water for 35 years, unless the Water Authority and Metropolitan elect to extend the agreement another 10 years for a total of 45 years.

4.2.4 Cost/Financing

The costs associated with the transfer are financed through the Water Authority's rates and charges. In the agreement between the Water Authority and IID, the price for the transfer water started at \$258/AF and increased by a set amount for the first seven years. In December 2009, the Water Authority and IID executed a fifth amendment to the water transfer agreement that sets the price per acre-foot for transfer water for calendar years 2010 through 2015, beginning at \$405/AF in 2010 and increasing to \$624/AF in 2015. For calendar years 2016 through 2034, the unit price will be adjusted using an agreed-upon index. The amendment also required the Water Authority to pay IID \$6 million at the end of calendar year 2009 and another \$50 million on or before October 1, 2010, provided that a transfer stoppage is not in effect as a result of a court order in the QSA coordinated cases. Beginning in 2035, either the Water Authority or IID can, if certain criteria are met, elect a market rate price through a formula described in the water transfer agreement.

The October 2003 exchange agreement between Metropolitan and the Water Authority set the initial cost to transport the conserved water at \$253/AF. Thereafter, the price is set to be equal to the charge or charges set by Metropolitan's Board of Directors pursuant to applicable laws and regulation, and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies. The transportation charge in 2010 is \$314/AF.

The Water Authority is providing \$10 million to help offset potential socioeconomic impacts associated with temporary land fallowing. IID will credit the Water Authority for these funds during years 16 through 45. In 2007, the Water Authority prepaid IID an additional \$10 million for future deliveries of water. IID will credit the Water Authority for this up-front payment during years 16 through 30.

As part of implementation of the QSA and water transfer, the Water Authority also entered into an environmental cost sharing agreement. Under this agreement the Water Authority is contributing a total of \$64 million to fund environmental mitigation projects and the Salton Sea Restoration Fund.

4.2.5 Written Contracts or Other Proof

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Water Authority–IID Transfer.

4.2.6 Existing and Future Supplies

Based on the terms and conditions in the Transfer Agreement, Table 4-1 shows the anticipated delivery schedule of the conserved transfer water in five-year increments. There is adequate documentation to demonstrate the availability of this supply, and, therefore, the supply yields shown in Table 4-1 will be included in the reliability analysis found in Section 9, “Water Supply Reliability.”

Table 4-1. Existing and Projected Water Authority–IID Transfer Supplies (Normal Year – AF/YR)

2010	2015	2020	2025	2030	2035
70,000	100,000	190,000	200,000	200,000	200,000

4.3 All-American Canal and Coachella Canal Lining Projects

As part of the QSA and related contracts, the Water Authority contracted for 77,700 AF/YR of conserved water from projects that lined portions of the AAC and CC. The projects reduced the loss of water that occurred through seepage, and the conserved water is delivered to the Water Authority. This conserved water will provide the San Diego region with an additional 8.5 million AF over the 110-year life of the agreement.

4.3.1 Implementation Status

The CC lining project began in November 2004 and was completed in 2006. Deliveries of conserved water to the Water Authority began in 2007. The project constructed a 37-mile parallel canal adjacent to the CC. The AAC lining project began in 2005 and was completed in 2010. The lining project constructed a concrete-lined canal parallel to 24 miles of the existing AAC from Pilot Knob to Drop 3.

4.3.2 Expected Supply

The AAC lining project makes 67,700 AF of Colorado River water per year available for allocation to the Water Authority and San Luis Rey Indian water rights settlement parties. The CC lining project makes 26,000 AF of Colorado River water each year available for allocation. The 2003 Allocation Agreement provides for 16,000 AF/YR of conserved canal lining water to be allocated to the San Luis Rey Indian Water Rights Settlement Parties. The remaining amount, 77,700 AF/YR, is to be available to the Water Authority, with up to an additional 4,850 AF/YR available to the Water Authority depending on environmental requirements from the CC lining project. For planning purposes, the Water Authority assumes that 2,500 AF of the 4,850 AF will be available each year for delivery, for a total of 80,200 AF/FY of that supply. According to the Allocation Agreement, IID has call rights to a portion (5,000 AF/YR) of the conserved water upon termination of the QSA for the remainder of the 110 years of the Allocation Agreement and upon satisfying certain conditions. The term of the QSA is for up to 75 years.

4.3.3 Transportation

The October 2003 Exchange Agreement between the Water Authority and Metropolitan provides for the delivery of the conserved water from the canal lining projects. The Water Authority pays Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. In the Agreement, Metropolitan will deliver the canal lining water for the term of the Allocation Agreement (110 years).

4.3.4 Cost/Financing

Under California Water Code Section 12560 et seq., the Water Authority received \$200 million in state funds for construction of the canal lining projects. In addition, \$20 million was made available from Proposition 50 and \$36 million from Proposition 84. The Water Authority was responsible for additional expenses above the funds provided by the state.

In accordance with the Allocation Agreement, the Water Authority is responsible for a portion of the net additional Operation, Maintenance, and Repair (OM&R) costs for the lined canals. Any costs associated with the lining projects are to be financed through the Water Authority's rates and charges.

4.3.5 Written Contracts or Other Proof

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Canal Lining Projects.

4.3.6 Future Supplies

Table 4-2 shows the anticipated delivery schedule of conserved supplies from the canal lining projects in five-year increments. Adequate documentation exists to demonstrate the availability of this supply, and, therefore, the reliability analysis found in Section 9, "Water Supply Reliability," will show the supply yields presented in Table 4-2.

Table 4-2. Projected Supply From Canal Lining Projects (Normal Year – AF/YR)

	2010	2015	2020	2025	2030	2035
CC Lining Project ¹	24,000	24,000	24,000	24,000	24,000	24,000
AAC Lining Project ²	56,200	56,200	56,200	56,200	56,200	56,200
Total:	80,200	80,200	80,200	80,200	80,200	80,200

¹ The project was completed in 2006, and deliveries started in 2007. Includes 21,500 AF + 2,500 AF environmental water deliveries.

² The project was completed in 2010.

4.4 Metropolitan Water District of Southern California

The Water Authority's imported water supply sources include purchases from Metropolitan. This is separate from and in addition to the Water Authority-IID Transfer supplies and CC and AAC Lining

Projects supplies. **Section 6** contains detailed information on Metropolitan's supplies, and information on Water Authority projected demands on Metropolitan, provided by Metropolitan, can be found in **Appendix I**.

4.5 Carlsbad Seawater Desalination Project

Development of seawater desalination in San Diego County will assist the region in diversifying its water resources, reduce dependence on imported supplies, and provide a new drought-proof, locally treated water supply. The Carlsbad Desalination Project (Project) is a fully-permitted seawater desalination plant and conveyance pipeline currently being developed by Poseidon, a private investor-owned company that develops water and wastewater infrastructure. The Project, located at the Encina Power Station in Carlsbad, has been in development since 1998 and was incorporated into the 2003 Water Facilities Master Plan and the 2005 Plan. The Project has obtained all required permits and environmental clearances and, when completed, will provide a highly reliable local supply of 56,000 AF/YR for the region.

4.5.1 Implementation Status

The Project has obtained all required permits and environmental clearances, including the following:

- National Pollutant Discharge Elimination System (NPDES) Discharge Permit (Regional Water Quality Control Board)
- Conditional Drinking Water Permit (California Department of Health Services)
- State Lands Commission Lease (State Lands Commission)
- Coastal Development Permit (California Coastal Commission)

IDE Technologies, a worldwide leader in the design, construction, and operation of desalination plants, was selected by Poseidon to be the desalination process contractor for the Project.

In July 2010, the Water Authority Board approved a Term Sheet between the Water Authority and Poseidon and directed staff to prepare a Water Purchase Agreement based on its provisions. Prior to the Water Authority engaging (in 2010) as a potential purchaser of all the water produced by the Project, Poseidon was pursuing a project structure where nine local water agencies had signed water purchase agreements. Ultimately, that project structure was found to be financially infeasible and the Water Authority was asked to step into the role of purchaser of the supply. Key terms for a potential Water Purchase Agreement between the Water Authority and Poseidon include the following:

- The term of the agreement will be for 30 years once commercial operation begins, subject to early buyout provisions beginning at 10 years.
- The Water Authority will shift the risks associated with the design, permitting, financing, construction, and operation of the Project to Poseidon.
- The price for water will be based on the actual cost of production.
- There will be the option to buy the entire plant beginning 10 years after the start date for commercial operation at a price to be specified in the water purchase agreement, as well as the right to purchase the plant at the end of the 30-year water purchase agreement term for \$1. This

ensures eventual public ownership of the plant, securing long-term price certainty and regional public benefit from ratepayers' past investments in the plant through 30 years of water purchase payments.

The Water Authority Board is expected to consider the Water Purchase Agreement by late 2011. The Project is expected to be completed and online by early 2016.

4.5.2 Expected Supply

When completed, the Project will provide a highly reliable local supply of 56,000 AF/YR of supply for the region, available in both normal and dry hydrologic conditions.

4.5.3 Transportation

A 54-inch pipeline will be constructed to convey product water from the desalination plant 10.5 miles east to the Water Authority's Second Aqueduct. The water will be then be conveyed 5 miles north to the Water Authority's Twin Oaks Valley Water Treatment Plant facility, where it will be blended with treated imported water and subsequently distributed into the Water Authority's existing aqueduct system.

4.5.4 Cost/Financing

The Term Sheet between the Water Authority and Poseidon provides the basis for a potential purchase agreement whereby the Water Authority would purchase the entire output from the Project at a price based on the cost of production. A preliminary September 2010 unit cost estimate was \$1,600/AF. The Water Authority's water purchase costs would be financed through Water Authority rates and charges. If the water purchase agreement is approved by the Water Authority Board, Poseidon plans to finance the capital cost of the Project with a combination of private equity and tax-exempt Private Activity Bonds.

4.5.5 Written Contracts or Other Proof

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Carlsbad Desalination Project.

4.5.6 Future Supplies

Table 4-3 shows the anticipated delivery schedule of supplies from the Carlsbad Desalination Project in five-year increments. Adequate documentation exists to demonstrate the availability of this supply, and therefore, the reliability analysis found in Section 9, "Water Supply Reliability," will show the supply yields presented in Table 4-3.

Table 4-3. Projected Supply from Carlsbad Desalination Project (Normal Year – AF/YR)

2010	2015	2020	2025	2030	2035
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4.6 Other Water Authority Seawater Desalination Efforts

4.6.1 MCB Camp Pendleton Seawater Desalination Project

The Camp Pendleton desalination project is not considered a verifiable supply, and is therefore not included in the reliability assessment contained in Section 9. The project is categorized as an additional planned project and is utilized in Section 10, “Scenario Planning – Managing an Uncertain Future,” as a potential strategy to manage future uncertainty planning scenarios. In June 2009, the Water Authority, in collaboration with MCB Camp Pendleton, completed a feasibility study for a potential 50 to 150 MGD seawater desalination project on Camp Pendleton focusing on two possible seawater desalination plant sites in the southwest corner of the base near the mouth of the Santa Margarita River. The feasibility study provided an analysis on new facilities, environmental and permitting requirements, cost estimates, and implementation issues. Major project components include: intake and discharge facilities, the seawater desalination facility, and the desalinated water conveyance system.

At a special meeting in May 2009, staff briefed the Board on the results and findings of the feasibility study and obtained Board approval to fund a new CIP project for \$5.72 million to conduct further planning work for the project. A Memorandum of Understanding (MOU) between the Water Authority and MCB Camp Pendleton was executed in April 2010. The MOU would facilitate base access and defines the roles and responsibilities of the base, the Water Authority, and its consultants in conducting various technical studies for the project. A key technical issue to be investigated further is the type of seawater intake that would be best suited for this project. Hydrogeologic and marine environment studies are planned to further evaluate both subsurface and open-ocean intakes. In addition, other studies on product water conveyance and integration for the Camp Pendleton project will be performed as part of the 2012 Master Plan Update.

These studies are expected to be underway by early 2011 and completed by the end of 2012. Results from the studies will be incorporated into the Water Authority’s 2012 Regional Water Facilities Optimization and Master Plan Update. The earliest online date of a potential Camp Pendleton desalination project is 2020.

4.6.2 Rosarito Beach Binational Desalination Plant Feasibility Evaluation and Preliminary Design

Currently, the Rosarito Beach Binational Desalination Project is considered a conceptual-level project and is therefore not included in the reliability assessment in Section 9. The Water Authority is participating with U.S. and Mexican agencies in a binational review of potential water management and water supply programs that could benefit Colorado River water users of both countries. As part of this effort, a binational workgroup formed to study potential new water supplies recommended the evaluation and preliminary design of an initial 25 MGD (expandable to 50 MGD) seawater desalination plant that would be located at Rosarito Beach in Baja California, Mexico. U.S. water agencies, including the Water Authority, Metropolitan, Southern Nevada Water Authority (SNWA), and the Central Arizona Water Conservation District (CAWCD), have collaborated to fund a feasibility evaluation and preliminary design of the plant. The Water Authority, Metropolitan, and SNWA are each funding 30 percent of the work, with CAWCD funding

the remaining 10 percent. Mexican agencies have supported the development of the project's scope of work and are expected to provide in-kind services in lieu of direct funding for the project. The Water Authority agreed to administer the consultant selection process and serve as project manager for the project.

If built, product water from the plant would be available to both U.S. and Mexican water users. For U.S. water users, the water could be delivered either directly to the San Diego region, using a cross-border pipeline, or possibly by exchange, with Mexican users taking delivery of the product water and leaving an equivalent amount of Colorado River water available for U.S. users. A separate local seawater desalination project is being pursued by Otay Water District at the same location, and is described in **Section 5.5**.

The project is scheduled to be implemented in four phases, with a "go" or "no go" decision being made at the end of each phase. Existing funding was sufficient to complete the first phase of the project, which provided a feasibility evaluation of the site, assessment of water demand, and a review of environmental permitting requirements. The first phase was completed in March 2010. The first phase confirmed that the site and the existing infrastructure were adequate to support up to a 50 MGD seawater desalination facility. The second phase of the project would confirm conceptual treatment process requirements, confirm plant size and physical layout, further assess permitting and regulatory issues, and define full-scale plant costs. The Water Authority's Board approved funding for the second phase of the study in January 2011. Additional funds would be required to complete the remaining two phases, which include development and operation of a pilot plant for various test purposes, and a preliminary design of the full-scale plant. The preliminary design would be for a 25 MGD seawater desalination plant, expandable to a 75 MGD plant.

4.7 Water Authority Dry-Year Supplies

In addition to Water Authority supplies expected during a normal water year, the Water Authority also has also invested in carryover storage supplies to assist in achieving reliability in dry year and multiple dry years, as discussed in Section 9.3, "Dry Water Year Assessment." The Water Authority's carryover storage supply program includes both in-region surface water storage and out-of-region groundwater storage in California's Central Valley. These verifiable dry-year storage supplies are described in detail in **Section 11**, "Shortage Contingency Analysis," and a list of the specific written contracts, agreements, and environmental permits associated with implementation of the carryover storage program is contained in Appendix E.

The Water Authority also successfully acquired and utilized dry-year transfers in 2009, as described in **Section 11.2.3.2**. The Water Authority's dry-year transfer program serves as a strategy to meet potential future planning uncertainties in times of shortages, identified in **Section 10**, "Scenario Planning – Managing an Uncertain Future."